

### REMARKS

This application has been reviewed in light of the Official Action dated April 24, 2002. Claims 10, 19, 20, and 23 are in independent form and Claims 10 through 24 remain for consideration in this case. Favorable reconsideration of all remaining claims is respectfully requested.

Claims 10-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,541,945 (Yamaguchi et al.) in view of U.S. Patent No. 5,757,840 (Hiroki) and U.S. Patent No. 5,802,096 (Okuda).

Claims 20-24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamaguchi et al. in view of Hiroki and Okuda, and further in view of U.S. Patent No. 5,757,832 (Uchida).

Applicant traverses the rejection and submits that the independent claims are patentable over the prior art for at least the following reasons.

As set forth in Claim 10, applicant's invention is a laser that comprises a first region with a first waveguide that includes a first diffraction grating, and a second region with a second waveguide that includes a second diffraction grating. A phase controlling region has a third waveguide and includes control means for controlling an effective refractive index of the third waveguide. The phase controlling region, the first region and the second region are serially coupled in order along a light propagation direction in the laser. These elements are constructed such that a coupling coefficient of the first region adjacent the phase controlling region is smaller than a coupling coefficient of the second region. Further, the first and second diffraction gratings have a common value of pitch.

In Claim 10 it is explicitly recited that the phase controlling region, the first region and the second region are serially coupled, *in this order*, along a light propagation direction in the laser. It is further recited that the first region is adjacent the phase controlling region. Thus, the first region is adjacent to the phase controlling region, while the second region is not, of necessity, adjacent to the phase controlling region.

None of the references teach or suggest provision of the regions in the claimed order. Hiroki and Yamaguchi each teach providing the phase controlling region between the first and second region. Applicants have found no teaching of the recited feature in the other cited art.

Applicant notes the Examiner proposed modifying Yamaguchi "as taught by Hiroki and Okuda" to meet features of the claim. However, even as modified, Yamaguchi does not teach serially coupling the phase controlling region, the first region and the second region in this order along a light propagation direction of the laser. Further, any modification of Yamaguchi, or Hiroki for that matter, that changes the structure from one in which the phase controlling region is between the first and second regions to one in which the structure is provided along the lines of the Claim 1 would be an improper change in the principle of operation of the reference. No motivation in the prior art has been provided for changing the structure of these references to the claimed structure. The only motivation Applicant can see for the modification is to meet the claimed features. It appears from the Office Action, particularly in the comments presented from the bottom of page 2 to the top half of page 3, that the Examiner is using the claim as a blueprint to guide each proposed modification, as the proposed modifications and/or modifications of the

modifications move further and further from what the prior art actually teaches. This is believed to be an improper hindsight reconstruction of the claims.

In summary, none of the prior art references teach the feature of Claim 10 discussed above, and there would have been no motivation to modify any of them to meet that feature.

As set forth in Claim 19, Applicant's invention is a method for driving a laser comprising the step of preparing the laser essentially as defined in Claim 10. Claim 19 additionally includes the step of changing a current injected into or a reverse voltage applied to the phase controlling region of the laser to change at least one of a polarization mode and a wavelength of light output from the laser. It is respectfully submitted that, for the reasons set forth with respect to Claim 10, Claim 19 is patentable over the cited references.

Claim 20 is directed to a light transmitter comprising a laser, again essentially as defined by Claim 10. The light transmitter further includes control means for controlling light output from the laser in accordance with a transmission signal, and a mode selector for selecting a component of a desired mode from the light output from the laser.

Therefore, it is submitted that, for the reasons set forth with respect to amended Claim 10, Claim 20 is believed patentable over the cited references.

As set forth in Claim 23, Applicant's invention is an optical communication system for communicating over a light transmission line that transmits a signal from a transmitter side to a receiver side. The system includes a light transmitter for transmitting light of a signal through the light transmission line that comprises a laser, essentially as defined in Claim 10, along with control means and a mode selector essentially as defined in

Claim 20. The communication system further includes a receiver for receiving and detecting an intensity modulated signal transmitted from the laser through the light transmission line.

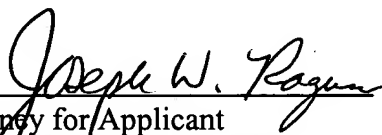
Accordingly, it is submitted that Claim 23 is patentable over the cited references.

The claims in the subject application other than those discussed in detail above are each dependent from one or more of those independent claims and are, therefore, believed to be patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing remarks, applicant respectfully requests favorable consideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

  
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